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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/717,128

11/19/2003

James Mac Freitag

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EXAMINER

CHEN, BRET P

ART UNIT

PAPER NUMBER

1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/717,128	<b>Applicant(s)</b> FREITAG ET AL.	
	<b>Examiner</b> B. Chen	<b>Art Unit</b> 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 December 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 13-15, 17 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 16 and 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Claims 1-19 are pending in this application. Amended claims 1, 16, 19 are noted.

The amendment dated 12/13/07 has been entered and carefully considered. In view of said amendment, the 112 rejection has been withdrawn.

Claims 13-15, 17-18 have been withdrawn from consideration as being directed to a nonelected invention.

### *Claim Rejections - 35 USC § 103*

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinarbasi (6,208,492) in view of Pinarbasi (6,317,299) or Huai et al. (6,381,105).** Pinarbasi '492 discloses a method of forming a magnetic head having a PtMn layer wherein the method comprises forming a bilayer seedlayer structure 302, forming an AFM layer 214 over the seedlayer structure, forming an AP layer structure 218/222/220 above the AFM layer, a spacer layer 212 over the AP structure, and a free layer 202 above the spacer layer (Figure 13). The AFM layer includes IrMn and PtMn (col.3 lines 56-60) and the various layers are formed using ion beam deposition (col.6 lines 20-25). The dR can be 4.5% (col.3 lines 1-32), the However, the reference fails to specifically teach forming a PtMn layer using ion beam deposition.

It is noted above that the reference clearly teaches that various layers can be formed by ion beam deposition. One skilled in the art would realize that the reference suggests that the PtMn layer could be deposited by ion beam deposition. It would have been obvious to one

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skilled in the art to deposit the PtMn layer by ion beam deposition given the teaching of Pinarbasi '492 that various layers can be formed by ion beam deposition.

In addition, Pinarbasi '299 teaches that PtMn materials can be deposited by ion beam deposition in spin valve sensors (col.6 lines 30-40) and Huai teaches that the antiferromagnetic layer such as PtMn (col.8 lines 59-63) can be deposited by ion beam deposition (col.9 lines 8-10). It would have been obvious to utilize ion beam deposition to deposit the PtMn layer in the process of Pinarbasi '492 with the expectation of success because Pinarbasi '299 and Huai teach the conventionality of using ion beam deposition to form the PtMn layer.

The limitations of claims 2-12 have been addressed above.

**Claims 16, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinarbasi (6,208,492) in view of Pinarbasi (6,317,299) or Huai et al. (6,381,105) and additionally in view of Deutchman et al. (5,055,318).** The combination of Pinarbasi '492, Pinarbasi '299, and Huai disclose a method of forming a magnetic head having a PtMn layer wherein the method comprises forming a bilayer seedlayer structure 302, forming an AFM layer 214 over the seedlayer structure by ion beam deposition, forming an AP layer structure 218/222/220 above the AFM layer, a spacer layer 212 over the AP structure, and a free layer 202 above the spacer layer as noted above. However, the references fail to teach using a first and second ion source.

Deutchman teaches of using a dual ion beam process for forming a film onto a substrate with the benefit of reducing the processing temperatures (col.1 lines 10-14). One ion beam source 20 focuses on the substrate 16 while the second ion beam source 26 focuses on the target

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31 (col.3 lines 50-68). In one embodiment, the process can be performed on magnetic heads (col.10 lines 40-68).

It is noted that Deutchman clearly teaches of utilizing a dual ion beam setup to form a magnetic head at lower processing temperatures to obtain many desirable characteristics. It would have been obvious to utilize Deutchman's setup in Pinarbasi's process with the expectation of obtaining lower processing temperatures and other desirable characteristics.

### ***Response to Arguments***

Applicant's arguments with respect to the claims above have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. Chen whose telephone number is (571) 272-1417. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bc  
2/14/07

  
**BRET CHEN**  
**PRIMARY EXAMINER**